7.4 Data Quality Objectives

OU 7-10 Glovebox Excavator Method Project - Responses to Agency Comments on the DQO Draft Document Submittal

- INEEL/EXT-02-00660, OU 7-10 Glovebox Excavator method Project Data Quality Objectives (Draft), Revision B, July 2002.

Note: Comments marked with "**" are significant.

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EPA	14	DQOs	Page 9, Section 3.1.1	14. QS1 & QS2 refer to the underburden and overburden, respectively. The waste zone consists of both interstitial soil and wastes which may be separable, even with the proposed retrieval technology. No distinction is made in the discussion?	The project considers the soil and waste to comprise a single waste stream in meeting its objectives of characterizing the waste for safe and compliant storage. There is no project requirement to segregate the materials; therefore, no distinction was made.
EPA	15	DQOs	Page 10, Section 3.1.10, 2nd bullet	15. Is the AMWTF still expected to receive the retrieved waste and soils? If not, this bullet and the affected DQO's need updating.	The project has recently decided not to use AWMTP. The second bullet in Section 3.1.10 and associated DQO will be revised.
EPA	16	DQOs	Page 10, Section 3.2.3	**16. Contaminant migration evaluations is not limited to underburden cores. As previously discussed EPA is interested in obtaining biased interstitial soil samples to assist in contaminant migration evaluation.	The project does not have a technical and functional requirement (T&FR) for bias sampling the waste zone "interstitial soil." However, the Field Sampling Plan is being revised to obtain the desired samples of soil for EPA analysis based on the EPA logic diagram.
EPA	17	DQOs	Page 11, Section 3.2.4	17. If the AMWTF is not being used, then this section needs to identify a two tiered characterization system. The first tier is characterization for safe storage. The second tier which can be developed at a later time is characterization for disposal or treatment.	This section will be revised since the AMWTP will not be used. The waste zone material will be characterized for safe and compliant storage according to the WAC for the on-site location (yet to be determined).
EPA	18	DQOs	Page 13, Table 1, QW1	18. If storage will be for an indefinite time, and given that different standards apply to regulated PCB's, concerning WIPP acceptability, screening tests should be considered to assist in identifying regulated PCB wastes.	The project is characterizing the excavated waste as a single waste stream and accepts the risk associated with this approach. The statistical method in determining contaminant levels, including PCBs, is consistent with WIPP's Waste Analysis Plan, and is based on definitive laboratory data. Uncontainerized free liquids entering the glovebox will be bias sampled and analyzed for PCBs and these results will be traceable to individual drums.
EPA	19	DQOs	Page 14, Table 1, QW3	19. If shipping to the AMWTF is no longer planned, this section needs to be revised.	This section will be revised based on an alternate storage location, which is yet to be determined.
EPA	20	DQOs	Page 14, Table 1, QP1	20. Other objectives that DOE should consider are distinguishing 741 sludges and graphite molds.	The project does not have a requirement to identify, segregate, or otherwise distinguish the 741 sludge or graphite molds. The bias sampling for 743 sludge is being performed to fulfill a sampling request by OU 13/14.
EPA	21	DQOs	Page 14	**21. No provision is made for EPA interstitial soil samples to be analyzed for QS1 parameters.	The Field Sampling Plan is being revised to include acquiring "interstitial soil" samples from the waste zone to be turned over to the EPA. The logic diagram received from the US EPA will be used as the basis for obtaining these samples.
IDEQ	22	DQOs	NA	1. No Comments	No response necessary.
IDEQ	26	FSP	General	5. The Field Sampling Plan (00542) is difficult to follow. It is more devoted to boilerplate for the DQO process rather than presenting a specific plan for the GEM project. The introduction should identify the actual problem addressed (1) demonstrating an excavation method and (2) demonstrating a sample sorting and packaging method. It should then describe the basic process and the expected materials to be encountered and how those different materials would be, should be, or need be handled. There is no particular order or justification for the processes involved. The compositing of samples from five	Section 1.1 and 1.2 describe the objectives of the overall project and the scope that the FSP addresses to meet some of those objectives. The order (format) of the plan is consistent with EPA guidance and internal INEEL procedures for FSPs. With respect to use of data and the significance of the statistical test: Sections 2.1.5 and 2.2.5 describe 5 decision rules associated with use of analytical results. Two of the five are based on establishing the UCL_{90} of the mean concentration of contaminants, and are applied

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				drums is described in detail, as is the statistical treatment of the analysis results. There is no discussion of how these results will be used or why the level of significance was chosen for the statistical test. What will this level of significance show? What will be done if the test fails? The decision rules are definite only for PCBs. The fissile monitoring system is not mentioned in this document or the DQO document. How does the fissile monitoring system interface with the measurements of this document?	assuming the entire drum population as a single waste stream. In these instances, use of the UCL_{90} of the mean concentration of contaminants is consistent with the WIPP Waste Analysis Plan – Permit Attachment B, Section B-4a(1) Data Quality Objectives. In general, if the UCL_{90} of the mean concentration of a contaminant is above a regulatory action level, the appropriate waste code will be applied to the entire drum population as stated in Section 2.1.5. The other decision rules are based on individual bias samples, and the results are applicable to individual drums. Three subpopulations, and therefore three decision rules, are identified in Section 2.2.5. Fissile monitoring is outside the scope of this FSP. It is briefly addressed in the DQO section Table 2 as a note that this will be performed, but under a program separate from the scope addressed by this FSP. The project plans no radiological analysis on waste zone samples as the project will rely on NDA of the entire drum population to meet Waste Acceptance Criteria.
IDEQ	29	Exc. Plan / FSP	General	8. The measurements under Step 2.19.2 appear to be independent from those in other steps where composited samples are taken. These composited samples are also analyzed for fissile content. How are these two types of results compared or coordinated?	The two types of results cannot be compared or coordinated since composited samples (i.e., those collected pursuant to QW3) are not planned to be analyzed for fissile content. The QW3 radioassay measurements (i.e., measurements 14a through 14h) apply only to the assay of waste drums to ensure safe and compliant storage and acceptability under the WAC for the TBD storage location. Also, please note that the QW3 radioassay measurements may change as a result of the project decision to store the waste on-site. As further clarification, the fissile material monitoring shown in Steps 2.19.1 through 2.19.4 of the Excavation Plan and Sequential Process Narrative is screening that is performed on suspected high fissile content material to determine whether it is necessary to subdivide and package the suspect material in separate waste drums. This step provides a control for the packaging operation to prevent the overloading of drums (i.e., to prevent exceeding the imposed 200-FGE per drum limit). As such, the FMM measurements support safe storage of the waste zone material (as identified in QW1, measurement 3) as well as ensuring a high probability of acceptance at the TBD storage location. The FMM measurements are recorded to document the fissile content (i.e., known portion) placed in each drum. Fissile content of the unmeasured portion is estimated based on a statistical analysis of over 3800 SWEPP drums. The estimated total (measured plus estimated amount) will eventually be replaced by the drum assay measurement.

7.5 Fissile Material Monitoring (FMM)

Sections 7.5.1 and 7.5.2 contain documents related to the fissile material monitoring (FMM) system. These documents are being provided as additional required studies.

7.5.1 FMM Hardware Summary

7.5.2 FMM System Description

THIS DOCUMENT HAS NOT BEEN RELEASED FOR PUBLICATION

7.6 RA Report Outline

Remedial Action Report

Proposed Outline for Review and Comment by the Agencies

The following outline identifies the proposed contents and structure of the Remedial Action (RA) Report. This outline reflects a project plan to combine the RA Report and the Operations and Maintenance Report into a single primary deliverable. Combining the reports will fit more closely with the nature of the project (i.e., short duration of the project performance period) and will allow more time for summary of the data and subsequent production of the primary document. Elements listed in the proposed outline reflect Federal Facilities Agreement/Consent Order, OU 7-10 Remedial Design/Remedial Action Scope of Work, and Guide (GDE) -72 requirements for the contents of the two reports.

Abstract
Abbreviations/Acronyms
Table of Contents

1. Introduction
   - 1.1. Background
   - 1.2. Project Objectives
   - 1.3. Project Constraints and Assumptions

2. Project Description
   - 2.1. General Description
   - 2.2. Project Life-Cycle and Critical Decisions

3. Prefinal Inspection Results
   (Refer to Attachment A)

4. Final Inspection Report
   (Refer to Attachment B)

5. Remedial Action Summary
   - 5.1. Synopsis of Work Performed (i.e., overburden removed, waste retrieved, underburden sampled, waste drums stored, data collected and analyzed, etc.)
   - 5.2. Explanation of Modifications to Planned Activities (i.e., changes to any plans provided to Agencies – QAPjP, WMP, Emissions Monitoring Plan, etc.,)
   - 5.3. Certification that Work was Performed (i.e., letter from DOE-ID stating that the work as defined was performed)

6. O&M Results (i.e., O&M Report)
   - 6.1. Results of Startup Phase (i.e., guidance refers to shakedown phase but this section would address startup plan and description of results of startup activities)
   - 6.2. Summary of O&M Activities Performed (e.g., inspections, operation records, and maintenance frequency)
   - 6.3. Description of Unexpected Events (if any)
   - 6.4. Results of Site Monitoring
     - 6.4.1. Results of NESHAPs Radiological Air Monitoring
     - 6.4.2. Results of Personnel Monitoring (i.e., worker exposure, ALARA)
     - 6.4.3. Results of Sampling Analysis

6.4.3.1. Overburden Radiological Survey Results
6.4.3.2. Underburden Sampling and Analysis
6.4.3.3. Drum Fissile Assay Results
6.4.3.4. Summary of Pit Origin Data (i.e., correlation of excavator scoops with pit zones and drum numbers)

Note: *Pit zones will be identified using polar coordinates (r, θ, d) – [r (radial distance from excavator arm pivot point, 0 to 20 ft), θ (angular position in degrees from right to left), and d (depth in ft)] – with an accuracy of ± 3 ft (1 m).*

6.4.4. Summary of Waste Data as Repackaged

6.5. Evaluation of Project Performance
6.5.1. ARAR Compliance
6.5.2. System Performance (i.e., performance of facility and equipment in meeting project objectives)

7. O&M Update
7.1. Follow-on O&M Activities (i.e., storage)
7.2. Impacts of Change Orders & Variations from Planned Conditions
7.3. Requirements for Periodic Reporting
7.4. Identification of O&M End-Points [e.g. includes at least two parts: (1) final waste disposition, and (2) transition of project facility to the INEEL Inactive Sites organization]

8. D&D&D Plan Update
8.1. Description of Site and Facility Conditions
8.2. Modification to D&D&D Approach (if necessary)
8.3. Waste Volume Update

9. References

10. Attachments

Attachment A

Prefinal Inspection Report

- Description of Prefinal Inspection Process
- Completed Prefinal Inspection Checklist (with inspection results)
- Identification and Description of Outstanding Items (i.e., items not yet inspected as well as any noted deficiencies)
- Prefinal Inspection Corrective Actions Plan

Attachment B

Final Inspection Report

- Results of Final Inspection (i.e., results of reinspection of deficient items and of inspection of outstanding Prefinal Inspection items)
- Responses to Agency Comments on Prefinal Inspection

7.7 Sampling & Analysis

Sections 7.7.1 and 7.7.2 contain documents relating to project sampling and analysis activities including the Field Sampling Plan (FSP) and the Environmental Restoration Quality Assurance Project Plan (QAPjP). These documents satisfy required elements of the remedial design.

7.7.1 Field Sampling Plan

- INEEL/EXT-02-00542, Field Sampling Plan for the OU 7-10 Glovebox Excavator Method Project (Draft), Revision B, July 2002.

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EPA	10	FSP	Page 24, Table 3	10. What rad analyses are indicated for soil and waste solids? (JM)	None, for the composited waste zone material samples. Radiological analysis will only be performed at the drum level and using Non-Destructive Evaluation / Non-Destructive Assay techniques for waste acceptance purposes. No other waste zone samples are planned to be collected for analysis of radiological properties.
EPA	11	FSP	Page 25, Section 3.2.2	11. It is stated that if valid data is not generated, the material in question will require resampling or will be conservatively classified as reactive and ignitable. What are the analysis turnaround times, and what impact on operations will this requirement have? (JM)	The analytical turnaround time is anticipated to be within 35 days after sample receipt by the laboratory. Regardless of analytical turnaround, the project does not plan to resample the material, as the drums will leave the PGS immediately after sampling/filling. The statement in section 3.2.2 of the FSP will be modified to remove the re-sampling option. In the unlikely event that valid data is not generated for this critical parameter and re-analysis of the sample to obtain valid data is not possible, the project will evaluate the drum(s) in question on a case-by-case basis and a conservative classification will be made with respect to the waste's reactive and ignitable characteristics.
EPA	12	FSP	Page 31, Section 3.3.3	12. This section discusses handling of the core samples and the limited amount of material for the various analytical requirements. Since radionuclide content is the most important attribute, one needs to maximize the sample size and optimize the protocol to extract maximum information. Water content should be considered less important (considering the conditions and the retrieval enclosure), and water content determined from the soil materials allocated for radionuclide analyses. Generally, radionuclide content is based on soil dry weight; therefore, one can obtain water content from an appropriate step in the radionuclide procedure. (JM)	The project concurs that radionuclide analysis is more important and takes precedence over moisture content analysis. The plan assumes sufficient volume exists to collect and analyze the aliquots stated. If this is not the case, radionuclide analysis will take precedence. No changes to the current approach are planned.
EPA	13	FSP	Page 40, Section 5.4	13. It is stated that the sectioning of the core (subsampling) will take place in a clean environment. The requirements for the "clean" environment should be clearly stated and provided by the contract laboratory. If for example, it is decided at a future date that underburden soil be subjected to radionuclide analysis by thermal ionization mass spectrometric methods to significantly increase detection sensitivity, performing subsampling and handling in a carefully controlled clean environment is mandatory. (JM)	The requirements for core sectioning will defined in the laboratory task order SOW and will include laboratory cleanliness requirements.
EPA	16	DQO s	Page 10, Section 3.2.3	**16. Contaminant migration evaluations is not limited to underburden cores. As previously discussed EPA is interested in obtaining biased interstitial soil samples to assist in contaminant migration evaluation.	The project does not have a technical and functional requirement (T&FR) for bias sampling the waste zone "interstitial soil." However, the Field Sampling Plan is being revised to obtain the desired samples of soil for EPA analysis based on the EPA logic diagram.
EPA	21	DQO s	Page 14	**21. No provision is made for EPA interstitial soil samples to be analyzed for QS1 parameters.	The Field Sampling Plan is being revised to include acquiring "interstitial soil" samples from the waste zone to be turned over to the EPA. The logic diagram received from the US EPA will be used as the basis for obtaining these samples.

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IDEQ	23	FSP	Page 24, Table 3	2. The "Soils and Waste Solids", under the column "Recommended Container" indicates that a 250 wide mouth amber jar will be used to contain the sample. It is assumed that the units on the 250 value are milliliters. Please clarify.	Concur, "ml" has been added to the document in the indicated location.
IDEQ	24	FSP	Page 30, Section 3.3.3	3. The first paragraph states that the underburden sample length is expected to range from 1.5 to 5 feet. The lower value is based on depth of basalt. For sample attempts that acquire less than 2 feet of sample material, it would be prudent to attempt another retrieval within the same zone. It is quite possible that by moving a few feet away a sample of greater length may be obtained, thus yielding a sample of greater analytical value. The opportunity to retrieve samples from this underburden is simply to great to accept limited sample retrieval without at least a second attempt to do so.	A core length of 1.5 feet or less will still provide valuable information on contaminants in the underburden. From a one foot core sample, the project will perform the suite of analyses as outlined in Table 5, including radionuclide analysis at 3 depths along the core length, VOC analysis, water content, and radionuclide mobility in the underburden soil. No additional core sampling is planned beyond the six samples identified in the plan.
IDEQ	26	FSP	General	5. The Field Sampling Plan (00542) is difficult to follow. It is more devoted to boilerplate for the DQO process rather than presenting a specific plan for the GEM project. The introduction should identify the actual problem addressed (1) demonstrating an excavation method and (2) demonstrating a sample sorting and packaging method. It should then describe the basic process and the expected materials to be encountered and how those different materials would be, should be, or need be handled. There is no particular order or justification for the processes involved. The compositing of samples from five drums is described in detail, as is the statistical treatment of the analysis results. There is no discussion of how these results will be used or why the level of significance was chosen for the statistical test. What will this level of significance show? What will be done if the test fails? The decision rules are definite only for PCBs. The fissile monitoring system is not mentioned in this document or the DQO document. How does the fissile monitoring system interface with the measurements of this document?	Section 1.1 and 1.2 describe the objectives of the overall project and the scope that the FSP addresses to meet some of those objectives. The order (format) of the plan is consistent with EPA guidance and internal INEEL procedures for FSPs. With respect to use of data and the significance of the statistical test: Sections 2.1.5 and 2.2.5 describe 5 decision rules associated with use of analytical results. Two of the five are based on establishing the UCL_{90} of the mean concentration of contaminants, and are applied assuming the entire drum population as a single waste stream. In these instances, use of the UCL_{90} of the mean concentration of contaminants is consistent with the WIPP Waste Analysis Plan – Permit Attachment B, Section B-4a(1) Data Quality Objectives. In general, if the UCL_{90} of the mean concentration of a contaminant is above a regulatory action level, the appropriate waste code will be applied to the entire drum population as stated in Section 2.1.5. The other decision rules are based on individual bias samples, and the results are applicable to individual drums. Three subpopulations, and therefore three decision rules, are identified in Section 2.2.5. Fissile monitoring is outside the scope of this FSP. It is briefly addressed in the DQO section Table 2 as a note that this will be performed, but under a program separate from the scope addressed by this FSP. The project plans no radiological analysis on waste zone samples as the project will rely on NDA of the entire drum population to meet Waste Acceptance Criteria.
IDEQ	27	FSP	General	6. The second paragraph of 3.2.2 discusses biased sampling of suspect nitrate bearing waste and states "Only material from carts with visually identifiable nitrate-bearing waste will be collected for the biased sample. The sample may contain components from one or more carts, representing (proportionally) both suspect and nonsuspect material" How does this process include nonsuspect material?	The following clarification was added to the FSP: "Nonsuspect material (e.g., soil and other waste) would contribute to the sample in the approximate proportion that they exist to the suspect nitrate bearing material in the cart."
IDEQ	28	FSP	General	7. Section 3.2.3 uncontainerized liquids. It is not clear what the second 50 ppm refers to in the penultimate sentence. Is this the concentration of the entire drum? If the liquids are stabilized on an	The concentration of the liquid sample (determined by analysis) will be that of the liquid prior to absorbing and not necessarily the concentration of the drum contents/solids.

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				adsorbent is it the concentration on the adsorbent?	The plan describes the steps necessary to characterize PCB concentrations in both the liquid and solid phases of material in the glovebox trays (assuming liquids are present). The second "50 ppm" refers to the PCB concentration of the liquids before stabilization. The separate characterization of liquid and solid phases is driven by 40 CFR 761.1(4)(iii) and (iv) which state: "(iii) Any person determining the PCB concentration of samples containing PCBs and non-dissolved non-liquid materials 0.5 percent, must separate the non-dissolved materials into non-liquid PCBs and liquid PCBs. For multi-phasic non-liquid/liquid or liquid/liquid mixtures, the phases shall be separated before chemical analysis. Following phase separation, the PCB concentration in each non-liquid phase shall be determined on a dry weight basis and the PCB concentration in each liquid phase shall be determined separately on a wet weight basis. (iv) Any person disposing of multi-phasic non-liquid/liquid or liquid/liquid mixtures must use the PCB disposal requirements that apply to the individual phase with the highest PCB concentration except where otherwise noted. Alternatively, phases may be separated and disposed of using the PCB disposal requirements that apply to each separated, single-phase material." In summary, the separate characterization is necessary to ensure that the appropriate disposal of liquid/non liquid PCBs occurs. Concentrations will be obtained for the PCBs in the liquid phase and for the PCBs in the solid phase. Disposal will then be based on the PCB disposal requirements that apply to the individual phase with the highest PCB concentration since the phases will not be separated.
IDEQ	29	Exc. Plan / FSP	General	8. The measurements under Step 2.19.2 appear to be independent from those in other steps where composited samples are taken. These composited samples are also analyzed for fissile content. How are these two types of results compared or coordinated?	The two types of results cannot be compared or coordinated since composited samples (i.e., those collected pursuant to QW3) are not planned to be analyzed for fissile content. The QW3 radioassay measurements (i.e., measurements 14a through 14h) apply only to the assay of waste drums to ensure safe and compliant storage and acceptability under the WAC for the TBD storage location. Also, please note that the QW3 radioassay measurements may change as a result of the project decision to store the waste on-site. As further clarification, the fissile material monitoring shown in Steps 2.19.1 through 2.19.4 of the Excavation Plan and Sequential Process Narrative is screening that is performed on suspected high fissile content material to determine whether it is necessary to subdivide and package the suspect material in separate waste drums. This step provides a control for the packaging operation to prevent the overloading of drums (i.e., to prevent exceeding the imposed 200-FGE per drum limit). As such, the FMM measurements support safe storage of the waste zone material (as identified in QW1, measurement 3) as well as ensuring a high probability of acceptance at the TBD storage location. The FMM measurements are recorded to document the fissile content (i.e., known portion) placed in each drum. Fissile content of

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					the unmeasured portion is estimated based on a statistical analysis of over 3800 SWEPP drums. The estimated total (measured plus estimated amount) will eventually be replaced by the drum assay measurement.